

Chapter 4

Product Parameter Control

4.1 Introduction

Chapter 4 addresses the parameters that control the product appearance characteristics of selected products. These characteristics may be modified to highlight significant data values or meteorological conditions.

4.2 Gage Bias Adjustment Toggle - URC LOCA

One of the functions of the Precipitation Processing System (PPS) computes radar/rain gage biases for those sites with sufficient real-time gage data. With their Unit Radar Committee approval, sites have the option of applying the bias to their precipitation estimates. The parameter which controls whether the radar rainfall estimates are actually multiplied by the bias computed in the PPS Adjustment algorithm is the **Gage Bias Adjustment Toggle**. Until the Gage Data Support System (GDSS) is deployed at your radar, the particular setting of this parameter is irrelevant since the default bias adaptable parameter setting is 1.0 (indicating no gage/radar bias). After the GDSS is deployed, the gage data will be supplied to the RPG and the Adjustment algorithm will execute (assuming more than NSETS (see Section 6.6.2) gage/radar pairs are generated each hour), even though this parameter may be set to NOT APPLIED. Only the graphic display of the precipitation products will be impacted by changing this parameter.

The Office of Hydrology recommends this parameter be initially set to NOT APPLIED until the forecasters gain confidence in the computed biases. The computed bias can be viewed on the alphanumeric terminal by looking at Page 1 of the Paired Alphanumeric Products associated with the One Hour Precipitation (OHP) and Storm Total Precipitation (STP) products or by looking at the Supplemental Precipitation Data (SPD) alphanumeric product.

SELECTION OF PRODUCT PARAMETERS		PAGE 1 OF 1
COMMAND: SE,****,		
FEEDBACK:		OPER A/
Select One.		
(C)ontour Product Parameters		
(CE)ll Product Parameters		
(L)ayer Product Parameters		
(O)HP/THP Data Levels		
(RC)M Product Parameters		
(RE)flectivity Data Level Code Select		
(S)TP Data Levels		
(VA)D and RCM Height Selections		
(VE)locity Data Level Code Select		
Gage Bias Adjustment Toggle:		NOT APPLIED

Figure 4.2-1

4.3 Contour Product Parameters - URC LOCA

By altering the data categories between the standard format product and the contour product, WSR-88D sites can highlight different phenomena or data threshold levels to meet the needs of the associated PUPs. These modifications only affect the contour products and do not affect any other RPG data processing.

4.3.1 Composite Reflectivity Contour Interval - URC LOCA

This parameter determines the interval in dBZs over which the contours are drawn for the Composite Reflectivity Contour product. The interval entry must be a multiple of 5.

4.3.2 Echo Tops Contour Base - URC LOCA

This parameter defines the base height at which the Echo Tops contours begin. The contour interval is defined by the PUP requesting the product.

4.3.3 Contour Filter Level - URC LOCA

This parameter defines the minimum number of vectors that make up a contour. Each contour is made up of many small lines (vectors). This means, for instance, if a contour only contains 3 vectors and the threshold is 4, that the contour will not be displayed.

CONTOUR PRODUCT PARAMETERS				PAGE 1 OF 1
COMMAND: SE,****,C,				
FEEDBACK:				OPER A/
(M)odify	(E)nd	(C)ancel		
	Comp Ref	Echo Tops	Contour	
	Contour	Contour	Filter	
	Interval	Base	Level	
-----	-----	-----	-----	
Current	5	30000	4	
-----	-----	-----	-----	
MIN	5	0	0	
MAX	25	40000	12	

Figure 4.3-1

4.4 Cell Product Parameters - URC LOCA

By altering the maximum number of cells in a product, users have control over both the visual appearance and the size of several products. Decreasing the number of cells required for transmission can decrease the product transmission time and therefore reduce potential narrowband loadshedding. In addition, by simplifying the display, it may also enhance the operator's ability to interpret products. However, caution should be exercised when limiting the number of cells

included in the product. Decreasing the number of cells displayed may hide information on potentially significant storms.

This menu is used to adjust the maximum number of storm cells in the STI (Storm Track Information), SS (Storm Structure), and Hail alphanumeric products and the STI, Hail, and Combined Attribute Tables that are disseminated to users. The primary reason for limiting the number of storm cells in products is to reduce the product sizes and, hence, reduce the chances of narrowband loadshedding. The parameters in this menu do **NOT** affect the number of storm cells identified and tracked or the number of storms cells in the STI and Hail graphic products or overlays.

When changing these parameters, one must consider that **all** users of the product will be affected. A compromise between the number of 'useful' storm cells (in the part of the product) and narrowband loadshedding should be the goal.

If narrowband loadshedding is a problem for users requesting some or all of the SS, STI, Hail Index (HI), and Composite Reflectivity (CR) products, lower the values for all products in this menu by the number of cells on one page of the product and observe the results. It is **NOT** recommended that the number of cells for any product (menu row) be reduced to less than 20 cells. If you've made appropriate changes to this menu and narrowband loadshedding is still a problem, consider reducing the number of product requests (from the Associated PUPs).

In the range of values, the upper limit is 100, which is the same as the upper limit on the maximum number of storm cells per volume scan (see the STORM CELL CENTROIDS Algorithm adaptable parameters). The lower limit for each parameter is the number of storm cells which fit on the first page of that part of the product. For example, there can be up to 10 storm cells on the first page of the Hail alphanumeric product.

To most efficiently reduce the product sizes, increase or decrease the maximum number of storm cells by the number of storm cells which fit on whole pages of (or part of) a product. The number of storm cells which fit on each page is equal to the lower limit in the range of acceptable values, except for the STI alphanumeric product. For example, the number of storm cells per page of the

CELL PRODUCT PARAMETERS			PAGE 1 OF 1
COMMAND: SE,*****,CE,			
FEEDBACK:			OPER A/
(M)ODIFY (E)ND (C)ANCEL			
DESCRIPTION	RANGE	VALUE	
MAXIMUM # OF CELLS IN STI ALPHANUMERIC PRODUCT	7 - 100	34	
MAXIMUM # OF CELLS IN SS ALPHANUMERIC PRODUCT	10 - 100	40	
MAXIMUM # OF CELLS IN HAIL ALPHANUMERIC PRODUCT	10 - 100	40	
MAXIMUM # OF CELLS IN STI ATTRIBUTE TABLE	6 - 100	36	
MAXIMUM # OF CELLS IN COMBINED ATTRIBUTE TABLE	4 - 100	32	
MAXIMUM # OF CELLS IN HAIL ATTRIBUTE TABLE	6 - 100	36	

Figure 4.4-1

Hail Attribute Table is 6. For the STI alphanumeric product, the first page lists up to 7 storm cells, but each additional page can list up to 9 storm cells.

The storm cells for each (part of a product) are sorted by a 'severity' attribute. For example, in the STI product the storm cells are sorted by cell-based VIL, and secondly, maximum reflectivity. When the number of storm cells identified exceeds the maximum number of storm cells in a particular (part of a) product, the storm cells nearest the top of the sorted list (i.e. 'the most severe' storm cells) are included.

4.5 Layer Product Parameters

This menu allows modification to the layered product layer definitions. The Layered Composite products are designed for use in generating national layer composite maps. These nationally standardized layers are generated at every WSR-88D site to support the FAA national aerospace weather monitoring program.

LAYER PRODUCT PARAMETERS					PAGE 1 OF 1	
COMMAND: SE,****,L,					OPER A/	
FEEDBACK:						
(M)odify (E)nd (C)ancel						
LAYER REFLECTIVITY					LAYER TURBULENCE	
L1 Hgt	L2 Hgt	L3 Hgt	Rng		L1 Hgt	L2 Hgt
Ft MSL	Ft MSL	Ft MSL	km		Ft MSL	Ft MSL
L3 Hgt					L3 Hgt	
Ft MSL					Ft MSL	
Current	24	33	60	460	24	33
MIN	6	12	18	40	6	12
MAX	58	64	70	460	58	64

Figure 4.5-1

4.6 One Hour Precipitation / Three Hour Precipitation (OHP/THP) Product Data Levels - URC LOCA

The displayable range of precipitation accumulation and quantization of accumulations into each color level can be changed by modifying the current displayable precipitation accumulation values. This functionality enables WSR-88D sites to modify the precipitation accumulation values and quantizations to meet local data requirements.

The One-hour Precipitation Accumulation (OHP) and Three-hour Precipitation Accumulation (THP) product data levels are controlled via the same menu, and therefore have the same accumulation and quantization values. In addition, the User Selectable Precipitation (USP) product data levels are controlled by this menu if the USP maximum rainfall is less than the Code 16 value (default = 8.00 inches). If the USP maximum rainfall exceeds the Code 16 value, the USP product data levels are controlled by the Storm Total Precipitation Accumulation (STP) data level menu

(see section 4.9). The displayable data levels range from 0.05 to 12.70 inches with a quantization resolution of 0.05 inches.

Modifications to these displayable product data levels **will affect all** associated PUPs and non-associated users of precipitation accumulation data. Coordination with affected RFCs is recommended.

OHP/THP DATA LEVELS					PAGE 1 OF 1
COMMAND: SE,*****,O,					
FEEDBACK:					OPER A/
(M)odify	(E)nd	(C)ancel	CODE	CURRENT(Inches)	
			1	ND	
			2	> 0.00	
			3	0.10	
			4	0.25	
			5	0.50	
			6	0.75	
note: Permissible value range is 0.05 to 12.70 inches in multiples of 0.05 inches. The value entered represents the minimum value of the data level.			7	1.00	
			8	1.25	
			9	1.50	
			10	1.75	
			11	2.00	
			12	2.50	
			13	3.00	
			14	4.00	
			15	6.00	
			16	8.00	

Figure 4.6-1

4.7 Radar Coded Message (RCM) Product Parameters

This menu defines the parameters for the RCM.

RCM PRODUCT PARAMETERS										PAGE 1 OF 1
COMMAND: SE,*****,RC,										
FEEDBACK:										OPER A/
Select one: (M)odify (E)nd (C)ancel										
RCM GENERATION										
RNG THRSH (dBZ)	RESTRICT	#	TIME(min)	TIME 1	TIME 2	EDITABLE				
	CLASS IV	CENT.	BEG EDIT	EDIT	Y/N	(min)	Y/N	(min)	PUP ID	
CUR 20.0	Y	12	1	1	Y	20	Y	50	RGOP	
MIN -33.0		0	1	1		0		0		
MAX 94.0		20	9	30		59		59		

Figure 4.7-1

4.8 Reflectivity Data Level Code Select (RCM)

This menu defines the reflectivity values for the RCM product, only.

RCM REFLECTIVITY DATA LEVEL CODE SELECT			PAGE 1 OF 1	
COMMAND: SE,*****,RE,				
FEEDBACK:			OPER A/	
(M)odify	(E)nd	(C)ancel	CODE	CURRENT
			0	≤ 15.0
			1	≤ 30.0
			2	≤ 40.0
			3	≤ 45.0
			4	≤ 50.0
			5	≤ 55.0
			6	> 55.0

Figure 4.8-1

4.9 Storm Total Precipitation (STP) Product Data Levels - URC LOCA

The Storm Total Precipitation Accumulation (STP) product data levels are controlled by this menu. In addition, the User Selectable Precipitation (USP) product data levels are controlled by this menu if the USP maximum value exceeds the Code 16 value (default = 8.00 inches) for the OHP/THP data levels. If the USP maximum rainfall is less than the OHP/THP Code 16 value, the USP product data levels are controlled by the OHP/THP data level menu (see section 4.6). The displayable range of precipitation accumulation and quantization of accumulations into each color level can be changed by modifying the current displayable precipitation accumulation values. This functionality enables modification of the precipitation accumulation values and quantizations to meet local data requirements. The displayable data levels range from 0.1 to 25.4 inches, with a quantization resolution of 0.1 inches.

Modifications to these displayable product data levels **will affect all** associated PUPs and non-associated users of precipitation accumulation data. Coordination with affected RFCs is recommended.

STP DATA LEVELS				PAGE 1 OF 1
COMMAND: SE,*****,S,				OPER A/
FEEDBACK:				
(M)odify	(E)nd	(C)ancel	CODE	CURRENT(Inches)
			1	ND
			2	> 0.0
			3	0.3
			4	0.6
			5	1.0
			6	1.5
			7	2.0
			8	2.5
			9	3.0
			10	4.0
			11	5.0
			12	6.0
			13	8.0
			14	10.0
			15	12.0
			16	15.0

note: Permissible value range
is from 0.1 to 25.4 inches
in multiples of 0.1 inches.
The value entered represents the
minimum value of the data level.

Figure 4.9-1

4.10 Velocity Azimuth Display (VAD) and RCM Height Selections - Delegated URC Authority

This screen is used to define the heights (MSL) of the VAD-derived wind estimates for the Radar Coded Message (RCM) and the VAD Wind Profile (VWP) products.

4.10.1 Delegated Authority Restrictions

RCM wind direction and speed, as output from the VAD algorithm, shall be reported at 1,000 foot increments from the nearest 1,000 ft MSL above the radar level (SURFACE) to 10,000 feet MSL; then at 2,000 foot increments from 12,000 to 20,000 feet MSL; and at the additional levels of 25,000; 30,000; 35,000 and 50,000 feet MSL. The VAD/RCM heights (up to 19 height values) must be specified as described herein to maintain national RCM wind height consistency. For radars with an elevation above 1000 ft MSL, the change authority is granted to the URC (or Agency field office where no URC exists) for the reassignment of the unused VAD/RCM heights to VAD only heights.

4.10.2 Supplemental Information - VWP Display Heights

The VAD Wind Profile (VWP) Product has the capability to display up to 30 heights. The heights are specified as up to 19 combination VAD and RCM heights (designated by a "B" on the UCP edit screen) and the remaining, up to a total of 30 heights, as VAD only (designated by a "V").

In the example UCP screen shown in Fig. 4.10-1, the radar elevation is 2955 ft MSL. Therefore, the lowest VAD/RCM height defined on the edit screen is the 3 kft height MSL (45 ft above the surface for this location). The "unused" VAD/RCM (B) heights (1 and 2 kft) were reassigned as VAD only (V) height selections at 21 kft and 52 kft, respectively.

VAD AND RCM HEIGHT SELECTIONS											PAGE 1 OF 1
COMMAND: SE,****,VA,											OPER A/
FEEDBACK:											
(M)odify, {STARTING HEIGHT} (E)nd (C)ancel											
1	2	3 B	4 B	5 B	6 B	7 B	8 B	9 B	10 B		
11 V	12 B	13 V	14 B	15 V	16 B	17 V	18 B	19 V	20 B		
21 V	22 V	23	24 V	25 B	26 V	27	28 V	29	30 B		
31	32	33	34	35 B	36	37	38	39	40 V		
41	42	43	44	45 V	46	47	48	49	50 B		
51	52 V	53	54	55	56	57	58	59	60		
61	62	63	64	65	66	67	68	69	70		
Heights are represented in Kft.											
Note: A selection of V indicates a VAD height only, while a selection of B indicates both a VAD and RCM height. A total of 30 VAD heights may be selected of which 19 may be both VAD and RCM height selections.											

Figure 4.10-1

4.11 Velocity Data Level Code Select - URC LOCA

The displayable range of velocities (maximum inbound to maximum outbound) and the quantization of velocities into each color level can be changed by modifying the velocity threshold tables. The WSR-88D provides for eight velocity threshold tables to define the base velocity product's display values. The eight different tables are needed to account for the velocity measurement increment being used and the weather mode. This enables WSR-88D sites to modify the velocity data maximum display values and quantizations to meet local velocity data requirements. For example, sites that are expecting very high sustained winds (e.g., a hurricane is approaching) may elect to modify the 16-level velocity threshold table to display wind speeds from -80 to +80 kts. This modification of the quantization levels may de-emphasize weak velocity values, and help to better differentiate tropical cyclone and hurricane force wind speed thresholds.

Modifications to the velocity product data levels **will affect all** associated PUPs and nonassociated users of velocity data.

VELOCITY DATA LEVEL CODE SELECT			PAGE 1 OF 1
COMMAND: SE,****,VE,			
FEEDBACK:COMMAND EXECUTED - SE,****,VE,D,4			OPER A/
(D)isplay, <CODE TABLE ID#>	CODE	CURRENT	
(M)odify (E)nd (C)ancel	1	THR	
	2	-64.	
	3	-50.	
	4	-36.	
Velocity threshold table: 4	5	-26.	
Wx Mode: A Velocity Lvl: 16	6	-20.	
Doppler Res. 0.5M/S 1 KT	7	-10.	
	8	-1.	
	9	0.	
	10	10.	
NOTE: If <CODE TABLE ID#> and its	11	20.	
associated Doppler interval,	12	26.	
weather mode and code levels	13	36.	
are not known, see HELP	14	50.	
screen.	15	64.	
	16	RF	

Figure 4.11-1

4.11.1 Velocity Data Level Tables

There are eight velocity data level tables stored at the RPG. Each table defines the velocity quantizations for a particular weather mode and velocity measurement increment. The VELOCITY DATA LEVEL CODE SELECT HELP screen shown below defines the Code Table ID # for each table.

VELOCITY DATA LEVEL CODE SELECT HELP				PAGE 2 OF 2
COMMAND:				
FEEDBACK:				OPER A/
Code Table ID Number	Doppler Res (m/s)	Associated Weather Mode	Default Number of Levels	
-----	-----	-----	-----	
4	0.5	Precipitation	16	
5	0.5	Precipitation	8	
6	1.0	Precipitation	16	
7	1.0	Precipitation	8	
26	0.5	Clear	16	
27	0.5	Clear	8	
28	1.0	Clear	16	
29	1.0	Clear	8	

Figure 4.11-2

4.11.2 Supplemental Information

When collecting velocity data using the 1 m/s (1.94 kt) velocity measurement increment, the Base Velocity (16 data level), Velocity Cross Section (16 data level), and Storm Relative Mean Radial Velocity data quantizations are defined using Code Table ID Number 6. However, when collecting velocity data using the .5 m/s (.97 kt) velocity measurement increment, the Base Velocity (16 data level) and Velocity Cross Section (16 data level) data quantizations are defined using Code Table ID Number 4, while the Storm Relative Mean Radial Velocity data quantizations are defined using Code Table ID Number 15, which is not editable via the UCP.